REMARKS

Claims 1-20 are pending in the present application, of which claims 1, 12 and 20 are independent claims. Claims 1, 12, and 20 have been amended herein. No new matter has been added. Entry of these amendments is requested.

Claim Objections

Claims 1, 12, and 20 were object to for lack of definition of the character "X." These claims have been amended to indicate that the character "X indicates absence of a query element." This is consistent with paragraph [0007] of the published application.

Claim 1 was also objected to because it was said that the word "devices" should be "device." Applicant agrees with the Examiner that the word should be "device." In Applicant's response filed May 6, 2008 the Applicant indicated deletion of the "s" in "devices" with a strikethrough. Therefore, Applicant believes no further correction is required in this instance.

Reconsideration and removal of the claim objections is requested in view of the above.

Claim Rejections

Applicant appreciates the indication that the prior response was persuasive to overcome the prior rejections.

Claims 1, 2, 8, 11, 12, and 13 have been rejected under 35 USC 103(a) as being unpatentable over Messerly (US Pat. No. 6,246,977) in view of Ishikawa (US Pat. No. 5,848,407).

With regard to claim 1, the Office Action asserts that Messerly teaches all but the last element of claim 1, i.e., the communication device, but says Ishikawa makes this element obvious.

At the outset, it should be noted that Messerly does not claim to be, nor does it describe, a system/ method for providing answers or solutions to questions. In the

present invention, a *query* is a question seeking an *answer*. In Messerly a *query* is an input sentence used for information retrieval. (Messerly, col. 1 lines 18-20) So while the present invention returns an answer to a question, Messerly might return a list of documents potentially relevant to a topic indicated by the input sentence. Put another way, if a question is input to Messerly, Messerly has no capacity to return an answer. Refer, for example, to Example 1 in the Present Application:

Input Question:

[0080] "How can I reduce cholesterol?"

Output Answer:

[0084] "Dietary measure-reduce-cholesterol saturation"

[0085] "Clofibrate-reduce-cholesterol"

[0086] "Saturation-reduce-serum cholesterol level"

Given an input question, the best Messerly could hope for is to return a relevant document – but not a direct answer to an input question. Therefore, at a most basic level, Messerly does not teach or make obvious the most critical aspect of claim 1 – to return an *answer* to a *question.*

According to Messerly, for example in FIGs. 1-3, target documents are "tokenized" and an index of tokens is stored. The index is specific to a document and identifies locations of the tokens (i.e., words) in the document. Presuming a database of indexed tokens has been created, an input statement is tokenized in the same manner that the target documents were tokenized. Tokens generated from the query are compared against indexed tokens for target documents. Target documents having an indexed token that matches a query token are ranked by relevance to the input statement. But no answers are generated.

Messerly credits itself with an improved tokenizer, as an advancement over the prior art. (Messerly, col. 2, lines 47-50) The improvement appears to be the ability to generate an expanded logical form from a primary logical form and then tokenize the expanded logical form (see FIGs. 12 and 13). Apparently, Messerly claims that only the words in a sentence or string were tokenized in prior approaches. (See Messerly, Background) Messerly tokenizes each word in a document based on the expanded

logical form that includes a primary logical form (i.e., deep subject, verb and deep object of a phrase or sentence) plus hypernyms of those words which score above a threshold level. In the index, the tokens are appended with one of three "reserved characters" (i.e., "_" for deep subject, "^" for verb, or "#" for deep object). Since some words (i.e., tokens) can have a different role depending on usage, the reserved characters improves the token comparison by providing a mechanism at the token level to determine whether or not two tokens (words) being compared have the same role. The present invention does not require reserved characters.

Beyond the fact the Messerly does not return an answer to a question, Messerly's information retrieval approach does not make obvious the specific elements of claim 1. For example, Messerly does not teach "a *knowledge base* comprising a set of answers having the form S-A-O (subject-action-object)." There are no answers stored in Messerly, only an index of tokens and documents. Tokens are not answers to input questions. As noted above, the best Messerly can hope for is to return a ranked list of documents related to a token generated from an input sentence. But even if a question is input in Messerly, an answer is not returned because Messerly does not have a knowledge base of answers in S-A-O form (or any other form) Whether or not tokens can be considered to be in S-A-O form is irrelevant because tokens are not answers to questions as in claim 1. Tokens are used to find documents in Messerly, but are not themselves available as answers to input questions.

The Office Action indicated that Messerly's document number (FIG. 13 item 1320) is a "link" as meant in this element of claim 1, but Applicant disagrees. Messerly indicates that the document number is an "identity of the document," but not a link to it. (Messerly, col. 10 line 29) That is, the document number identifies a document within which the token can be found, while the word number 1330 identifies the location of the token (word) within the document – together they enable Messerly's information retrieval engine 260 to locate the token in the document. The document number and word number do not constitute a "link" to the document, just a location of a token within the document. In any event, for clarification, Applicant has amended claim 1 to indicate that the "document links" in claim 1 are "active document links." (See, e.g., Present Application,

para. [0061]) Clearly this is not the case in Messerly, because the document number in Messerly is only used internally by its information retrieval engine to locate a document.

Additionally, Messerly does not teach the *problem statement generator* of claim 1, "configured to ... automatically generate a problem statement in the form A-O, S-A, S-X-O or S, where S, A and O are query elements in the natural language query, where X indicates absence of a query element." The Office Action indicates that the *logical form* shown in Messerly's FIG. 5 is a problem statement as in claim 1. But Messerly's logic form is not in A-O form, S-A form, S-X-O form, or in S form. Rather, Masserly's logical form is only taught as deep subject-verb-deep object. Even if Messerly's logic form were construed as being in S-A-O form, it cannot be construed as being in the other claimed forms, which means Messerly does not teach a problem statement generator that can generate a problem statement in all of the required forms. The particular form used by the claimed problem statement generator depends on the received query, but the claimed problem statement generator is configured to generate a problem statement in all of the claimed forms and Messerly does not teach this.

As context, in Messerly, the logical form is purely a grammatical concept: "deep subject" and "deep object" are only a "noun", and "verb" is only a "principal verb" (col. 6, lines 17-20). And Messerly's logical form is built by "eliminating modifiers" and only "ignoring differences in tense" (col. 6, lines 56-57). In contrast, the claimed S-A-O is a semantic concept, requiring a deep linguistic analysis of text. Here Subject and Object may have their own attributes and may be expressed by sophisticated linguistic constructions. For example, from the sentence "The electric device heats water to produce vapor," a system in accordance with claim 1 will recognize three complete S-A-O's:

(1) electric device - heat - water

(2) electric device - produce - vapor

(3) electric device heating water - produce – vapor

Therefore, several S-A-Os can be generated from a single sentence, increasing the number of answer S-A-Os that can be provided in response to a question. As for

"Action" of S-A-O, it may be expressed in the text with the help of finite verbs, non-finite verbs and verbal nouns. But Messerly only concerns itself with *principal* verbs. For example, from the sentences "Device for evaporating water...", "Device for water evaporation..." and "Device for evaporation of water..." the same S-A-O will be extracted: device - evaporate - water. Due to this, the claimed system provides significantly greater accuracy and completeness of the search. However, in Messerly the situation is reversed: the logical form is built by "eliminating modifiers" and "ignoring differences in tense" (col. 6, lines 56-57). In short, Messerly has no capacity to take advantage of information within the received text beyond deep subject-verb-deep object.

Another contrasting aspect of Messerly is that it teaches expanding its logical form with other words (i.e., derivative deep subjects-verbs-deep objects) that were explicitly not in the original query. In fact, this is cast as a central aspect of Messerly's improvement over prior tokenizers. Messerly's (primary) logical form (FIGs. 5 and 14) is an intermediate step in arriving at an *expanded* logical form in Messerly that expressly includes words not in the original input sentence (*derivative* logical forms determined from hypernyms). (See Messerly, FIGs. 11, 12, 13, 15, 17, and 18) In contrast, claim 1 requires that the problem statement generator generates the problem statement with a combination of S-A-Os, "where S, A and O are query elements in the natural language query." Therefore, while S-A-Os in the problem statements are expressly taken directly from the input question, in Messerly logical forms are expressly expanded to include words not originally found in the input sentence. This is another significant difference.

The server of claim 1 is also not taught by Messerly, for reasons related to those discussed above. If the logic form of Messerly is asserted to be the closest analogy to the problem statement of claim 1, as the Office Action argued, then Messerly does not use its logical form to search for documents, let alone answers. The expanded logical form is an intermediate step along the way to Messerly generating an index of tokens (FIG. 13). But neither the tokens nor the index are the logical form, they are generated *from* the logical form.

And tokens are not problem statements as discussed above. Messerly's index may contain some words from the input sentence, along with some derived words that are

not from the input sentence. But searching for documents using indexed tokens is not the same as searching for S-A-O answers using the claimed problem statement. Messerly does not search for *answers* at all (e.g., "[0085] Clofibrate-reduce-cholesterol") – Messerly searches for *documents*. And Messerly absolutely does not search for "S-A-O answers." Granted, Messerly searches for matching tokens, but the tokens are merely words, and even if tokens were grouped together they still would not constitute a problem statement or S-A-O *answers* to the originally input *question*. In short, the token matching is used to locate a document – not an answer. In the present invention the answer and an associated document are different entities, which is why the claimed communication device transmits both the "at least one S-A-O answer and associated active document links."

For several reasons, Messerly does not teach or make obvious each and every element of claim 1, whether alone or in combination with Ishikawa. Fundamentally, Messerly does not return answers to questions. Reconsideration and removal of the rejection is requested.

Claims 2, 8 and 11 depend from claim 1 and should inherit the patentability thereof. Reconsideration and removal of the rejections is requested.

With particular regard to claim 2, while Messerly shows an Internet connection 223, it absolutely does not teach the server of claim 2. Keep in mind that the server in claim 2 conducts a search of the Web based on an existing problem statement – so it is responsive to a received problem statement and searches the Web, stores the links, and adds the new answer S-A-Os to the knowledge base – all based on the problem statement generated from the original query. Beyond the fact that Messerly does not have a knowledge base of answers and does not return answers, Messerly does not search for or store links or new documents based on the original query. In fact, Messerly requires documents be received in advanced so they can be tokenized, see FIG. 3. Once documents are tokenized then they become available for token matching with input

statements. For these additional reasons Messerly and Ishikawa, whether alone or in combination, do not make obvious claim 2.

Claim 12 was rejected on the same grounds as claim 1, and has been amended in a manner similar to claim 1 and is patentable over Messerly and Ishikawa, whether alone or in combination. Reconsideration and removal of the rejection is requested.

Claim 13 depends from claim 12 and should inherit the patentability thereof. Claim 13 is also similar to claim 2 discussed above, and was rejected on the same grounds. For several reasons, Messerly and Ishikawa, whether alone or in combination, do not make obvious claim 13. Reconsideration and removal of the rejection is requested.

Claims 3 and 14 have been rejected under 35 USC 103(a) as being unpatentable over Messerly in view of Ishikawa and in further view of Hatton (US Pat. No. 6,269,356). Claim 3 depends from claims 1 and 2 and claim 14 depends from claims 12 and 13 and should inherit the patentability of those claims, respectively.

The applicability of Hatton to the claims 3 and 14 has been discussed in prior responses, and those remarks are reasserted here. In addition to all of the distinctions noted above with respect to Messerly and Ishikawa, since Hatton relies entirely on its own Experience databases for information retrieval, Applicant suggests that it is not obvious to search external (non-Experience databases) based on Hatton.

For several reasons, Messerly, Ishikawa and Hatton, whether alone or in combination, do not make obvious claims 3 and 14. Reconsideration and removal of the rejections is requested.

Claims 4 and 15 have been rejected under 35 USC 103(a) as being unpatentable over Messerly in view of Ishikawa and in further view of Lamberti (US Pat. No. 5,377,103). Claim 4 depends from claims 1 and 2 and claim 15 depends from claims 12 and 13 and should inherit the patentability of those claims, respectively.

The applicability of Lamberti to the claims 4 and 15 has been discussed in prior responses, and those remarks are reasserted here. For several reasons, Messerly, Ishikawa and Lamberti, whether alone or in combination, do not make obvious claims 4 and 15. Reconsideration and removal of the rejections is requested.

Claims 5-7, 9-10 and 16-19 have been rejected under 35 USC 103(a) as being unpatentable over Messerly in view of Ishikawa and in further view of Johnson (US Pat. No. 5,748,974). Claim 5-7, 9-10 depend from claim 1 and claims 16-19 depend from claim 12 and should inherit the patentability of those claims, respectively.

The applicability of Johnson to the claims 5-7, 9-10 and 16-19 has been discussed in prior responses, and those remarks are reasserted here. For several reasons, Messerly, Ishikawa and Johnson, whether alone or in combination, do not make obvious claims 5-7, 9-10 and 16-19. Reconsideration and removal of the rejections is requested.

Claim 20 has been rejected under 35 USC 103(a) as being unpatentable over Messerly in view of Levin et al. (US Pat. No. 6,173,279). Claim 20 is an independent claim that has been amended in a manner similar to claim 1.

Claim 20 was primarily rejected based on Messerly, but Levin was used to show aspects relating to the URL query and HTML page not present in Messerly. For reasons put forth above with respect to claim 1, Messerly and Levin, whether alone or in combination, do not make obvious the method of claim 20. Additionally, since neither Messerly nor Levin teach generating problem statements and answer S-A-Os as in claim 20, they do not teach "converting the problem statement into a URL query" and "converting the one or more S-A-O solutions into at least one HTML page" as in claim 20.

Reconsideration and removal of the rejection is requested.

Closing Remarks

It is submitted that all claims are in condition for allowance, and such allowance is respectfully requested. If prosecution of the application can be expedited by a

telephone conference, the Examiner is invited to call the undersigned at the number given below.

In connection with this matter, please charge any otherwise unpaid fees which may be due or credit any overpayment to Deposit Account No. 501798.

Respectfully submitted,

Date: Oct. 22, 2008

David M. Mello
Registration Number 43,799
Attorney for Applicant

Mills & Onello, LLP
Eleven Beacon Street, Suite 605
Boston, MA 02108
Telephone: (617) 994-4900, Ext. 4959
Facsimile: (617) 742-7774

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